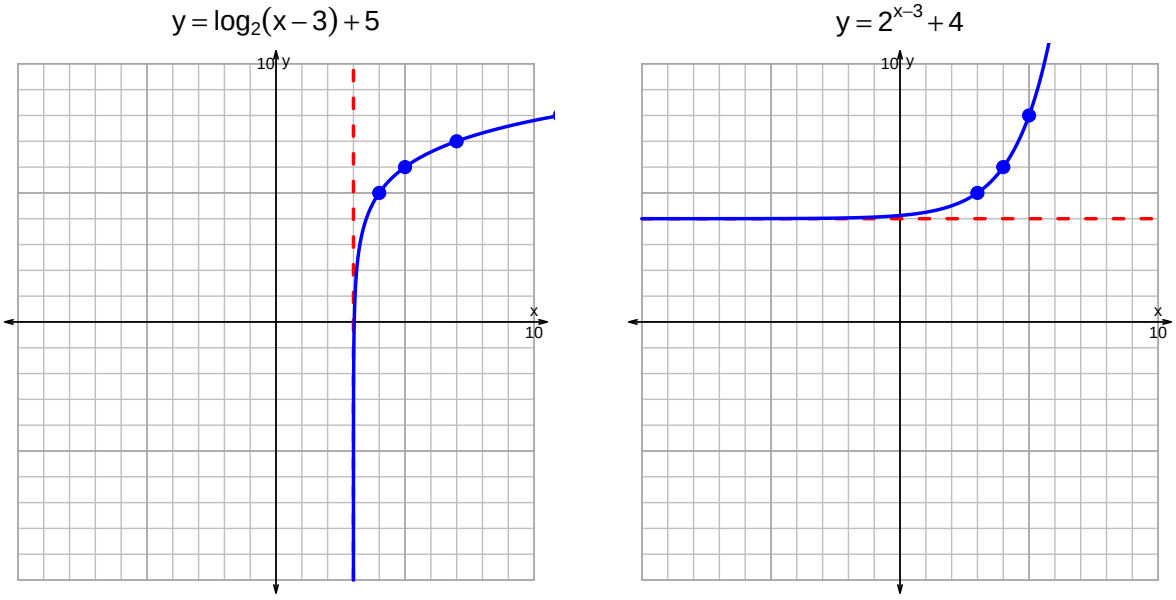
Name: Date:

s18quiz: EXP LOG (Solution v105)

1. Graph $y = \log_2(x-3)+5$ and $y = 2^{x-3}+4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-29 = \left(\frac{-4}{5}\right) \cdot 2^{7t/3}$$

Divide both sides by $\frac{-4}{5}$.

$$\frac{29 \cdot 5}{4} = 2^{7t/3}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{29 \cdot 5}{4}\right) = \frac{7t}{3}$$

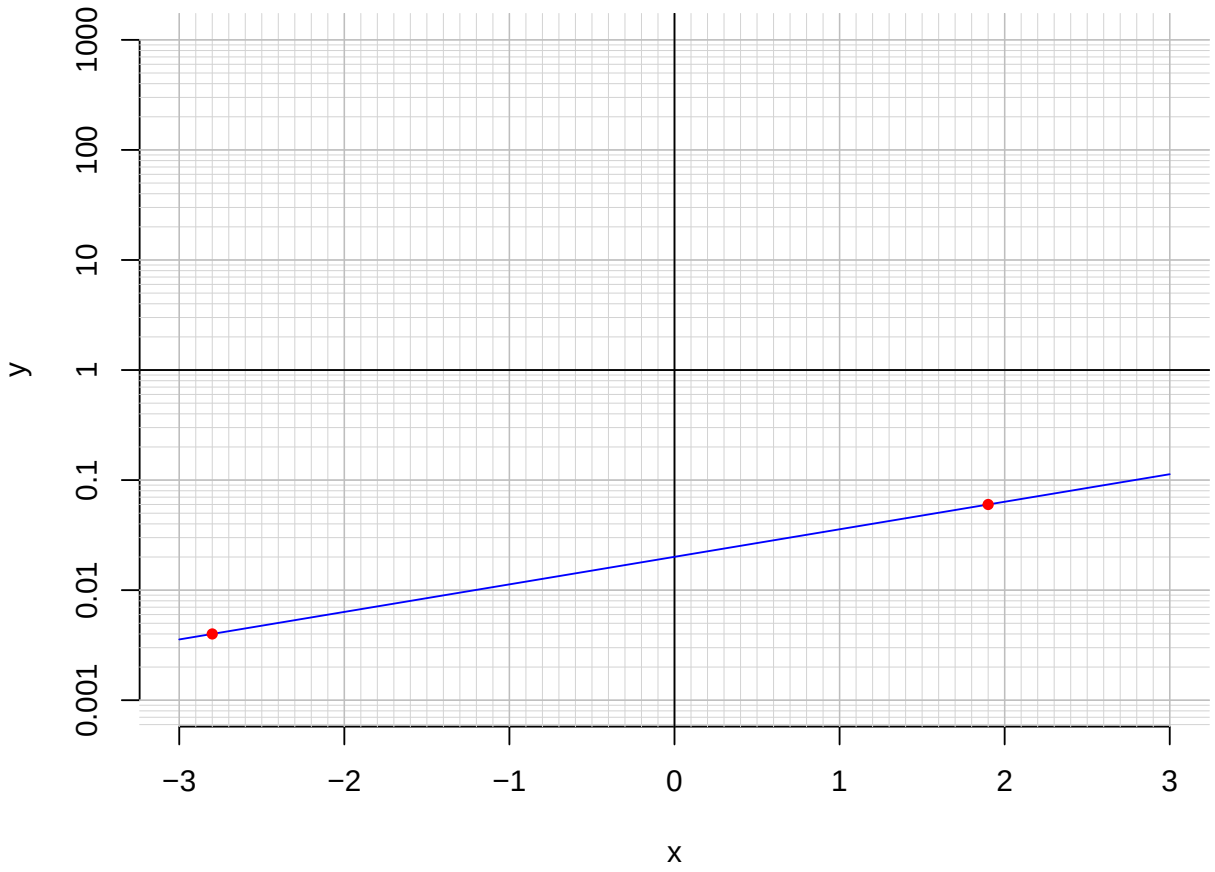
Divide both sides by $\frac{7}{3}$.

$$\frac{3}{7} \cdot \log_2\left(\frac{29 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{3}{7} \cdot \log_2\left(\frac{29 \cdot 5}{4}\right)$$

3. An exponential function $f(x) = 0.0201 \cdot e^{0.576x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(1.9)$.

$$f(1.9) = 0.06$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{0.576} \cdot \ln\left(\frac{x}{0.0201}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.004)$.

$$f^{-1}(0.004) = -2.8$$